

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C

OBJECTIVE DESCRIPTION OF VARIETY
GENERAL FORM FOR ANY SPECIES

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)		FOR OFFICIAL USE ONLY
		PVPO NUMBER

This is a general form for use when a form for a specific genus and species is not available. Applications of this type are made in species in which few varieties, if any, are commonly known. For that reason, a form cannot be drafted as the span of the variation of most characteristics is not known. In this case, the varieties are described according to the classical Linnaean way. Using a dictionary of botanical terms and this from, describe the characteristics of the application variety on the left side of the form and describe the most similar comparison variety on the right side of the form. Be as specific as possible. Include photographic prints of the varieties.

1. QUALITATIVE TRAITS

Crop Kind (Common Name): _____	Name of Comparison: _____
Genus and Species: _____	Source of Comparison: _____
Location Where Developed: _____	
Preferred Growing Conditions (light, moisture, soil type, pot/bedding/ground cover, etc.):	Growing Conditions:
Propagation Method (seed/tuber/cuttings/etc.; inbred/hybrid/open pollinated/etc.; annual/perennial/etc.):	Propagation Method:
Whole Plant Habit (herbaceous/woody; upright/prostrate; thorns; tendrils; etc.):	Plant Habit:
Leaf Shape (simple/compound; arrangement of stem; whole leaf shape; leaf margin; leaf base; leaf apex; leaf attachment; leaf venation; pubescence; waxiness; glands; fragrance; etc.):	Leaf Shape:

Flowers (inflorescence type; floret shape; bud; sepals; petals; stigma; stamen; pollen; etc.)	Flowers:
Fruits (type; surface features; attachment; seeds; etc.)	Fruits and Seeds:

2. QUANTITATIVE TRAITS

		Trait	Average (Mean)	Standard Deviation	Sample Size	Trait	Average (Mean)	Standard Deviation	Sample Size
		Number of Chromosomes (1N)	_____			Number of Chromosomes (1N)	_____		
M A T U R I T Y	From Direct Seeding	Days from emergence to first flower	_____			Days from emergence to first flower	_____		
		Days from emergence to 50% of plant in flower	_____			Days from emergence to 50% of plant in flower	_____		
		Days from first flower to last flower	_____			Days from first flower to last flower	_____		
	From Trans- Planting	Days from transplant to first flower	_____			Days from transplant to first flower	_____		
		Days from transplant to 50% of plant in flower	_____			Days from transplant to 50% of plant in flower	_____		
		Days from first flower to last flower	_____			Days from first flower to last flower	_____		
	From Pack Trials	Days from emergence to first flower	_____			Days from emergence to first flower	_____		
		Days from emergence to 50% of plant in flower	_____			Days from emergence to 50% of plant in flower	_____		
		Days from first flower to last flower	_____			Days from first flower to last flower	_____		
P L A N T		MM Plant Height at Maturity	_____.			MM Plant Height at Maturity	_____.		
		MM Plant Width (Spread) at Maturity	_____.			MM Plant Width (Spread) at Maturity	_____.		
		Number of Stems Arising from Base of Plant	_____			Number of Stems Arising from Base of Plant	_____		
		MM Main Stem Length	_____			MM Main Stem Length	_____		
		MM Main Stem Diameter at Mid-point	_____.			MM Main Stem Diameter at Mid-point	_____.		
		Number of Branches (arising from lower half of main stem)	_____			Number of Branches (arising from lower half of main stem)	_____		
		Branch Angle from Main Stem	_____			Branch Angle from Main Stem	_____		
L E A V E S		Leaf Angle from Main Stem	_____			Leaf Angle from Main Stem	_____		
		MM Width of Leaf	_____.			MM Width of Leaf	_____.		
		MM Length of Leaf Including Petiole	_____.			MM Length of Leaf Including Petiole	_____.		
		MM Thickness of Leaf	_____.			MM Thickness of Leaf	_____.		
		MM Length of Petiole	_____.			MM Length of Petiole	_____.		
		MM Width of Leaflet	_____.			MM Width of Leaflet	_____.		
		MM Length of Leaflet	_____.			MM Length of Leaflet	_____.		

INFLORESCENCE	MM Inflorescence Height from Ground	_____			MM Inflorescence Height from Ground	_____		
	MM Inflorescence Width (Diameter)	_____			MM Inflorescence Width (Diameter)	_____		
	MM Depth of Head or Inflorescence	_____			MM Depth of Head or Inflorescence	_____		
	Number of Florets Per Inflorescence	_____			Number of Florets Per Inflorescence	_____		
	MM Length of Peduncle	_____			MM Length of Peduncle	_____		
INDIVIDUAL FLORET	Number of Sepals per Floret	_____			Number of Sepals per Floret	_____		
	Number of Petals per Floret	_____			Number of Petals per Floret	_____		
	Number of Anthers per Floret	_____			Number of Anthers per Floret	_____		
	Number of Stigmas per Floret	_____			Number of Stigmas per Floret	_____		
	MM Floret Diameter	_____			MM Floret Diameter	_____		
	MM Eye Diameter	_____			MM Eye Diameter	_____		
	MM Petal Length (ray flower if compositae)	_____			MM Petal Length (ray flower if compositae)	_____		
	MM Petal Width (ray flower if compositae)	_____			MM Petal Width (ray flower if compositae)	_____		
	MM Disk Flower Length (Compositae only)	_____			MM Disk Flower Length (Compositae only)	_____		
	MM Disk Flower Width (Compositae only)	_____			MM Disk Flower Width (Compositae only)	_____		
	MM Sepal Length	_____			MM Sepal Length	_____		
	MM Sepal Width	_____			MM Sepal Width	_____		
	INDIVIDUAL FRUIT	MM Fruit Length	_____			MM Fruit Length	_____	
MM Fruit Width		_____			MM Fruit Width	_____		
MM Fruit Thickness		_____			MM Fruit Thickness	_____		
GM Fruit Weight		_____			GM Fruit Weight	_____		
MM Fruit Rind or Skin Thickness		_____			MM Fruit Rind or Skin Thickness	_____		
MM Fruit Flesh Thickness		_____			MM Fruit Flesh Thickness	_____		
Number of Locules (Cavities) per Fruit		_____			Number of Locules (Cavities) per Fruit	_____		
MM Cavity Width		_____			MM Cavity Width	_____		
MM Cavity Length		_____			MM Cavity Length	_____		
Number of Seeds per Fruit		_____			Number of Seeds per Fruit	_____		
SEEDS	MG Weight per 1000 Seeds	_____			MG Weight per 1000 Seeds	_____		
	MM Seed Length	_____			MM Seed Length	_____		
	MM Seed Width	_____			MM Seed Width	_____		
	MM Seed Thickness	_____			MM Seed Thickness	_____		
OTHER								

3. PLANT COLORS

	Color Verbal Name	Color Chart Code	Name of Color Chart		Color Verbal Name	Color Chart Code	Name of Color Chart
Example	Light Blue	106C	RHS				
Hypocotyl Color				Hypocotyl Color			
Cotyledon				Cotyledon			
Brace Root Color				Brace Root Color			
Main Stem Color, Mature				Main Stem Color, Mature			
Leaf or Leaflet Color, Dorsal				Leaf or Leaflet Color, Dorsal			
Leaf or Leaflet Color, Ventral				Leaf or Leaflet Color, Ventral			
Leaf or Leaflet Venation Color				Leaf or Leaflet Venation Color			
Leaf Color, Other (describe location or placement)				Leaf Color, Other (describe location or placement)			
Petiole Color				Petiole Color			
Tendrill Color				Tendrill Color			
Thorn Color				Thorn Color			
Bud (Unopened Flower) Color				Bud (Unopened Flower) Color			
Stigma Color				Stigma Color			
Style Color				Style Color			
Ovary (Immature Flower) Color				Ovary (Immature Flower) Color			
Pollen Color				Pollen Color			
Anther Color				Anther Color			
Filament Color				Filament Color			
Petal Color, Main				Petal Color, Main			
Petal Color, Blotches				Petal Color, Blotches			
Petal Color, Streaks				Petal Color, Streaks			
Petal Color, Spots				Petal Color, Spots			
Petal Color, Veins				Petal Color, Veins			
Petal Color, Eye				Petal Color, Eye			
Petal Color, Throat				Petal Color, Throat			
Petal Color, Disk Flowers (Compositae only)				Petal Color, Disk Flowers (Compositae only)			
Floral Color, Other (describe location or placement)				Floral Color, Other (describe location or placement)			
Sepal Color				Sepal Color			
Mature Fruit Color, Skin				Mature Fruit Color, Skin			
Mature Fruit Color, Flesh				Mature Fruit Color, Flesh			

Fruit Color, Other (describe locatoin or placement)				Fruit Color, Other (describe locatoin or placement)			
Seed Coad Color				Seed Coad Color			
Seed Embryo Color				Seed Embryo Color			
Seed Structure Color, Other (describe location or placement)				Seed Structure Color, Other (describe location or placement)			

Note: Common Color Charts: RHS = Royal Horticultural Society Colour Chart
Munsell = Munsell Book of Color
HCC = Horticultural Colour Chart
BCC = British Colour Council Dictionary of Colour Standards

4. DISEASE, INSECT AND ENVIRONMENT RESISTANCE

(Rate from 1 (most susceptible) to 9 (most resistant))

<input type="checkbox"/> Powdery Mildew <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Aphids <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Heat <input type="checkbox"/> Cold <input type="checkbox"/> Lodging <input type="checkbox"/> Wind <input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Powdery Mildew <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Aphids <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Heat <input type="checkbox"/> Cold <input type="checkbox"/> Lodging <input type="checkbox"/> Wind <input type="checkbox"/> Other (Specify) _____
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REFERENCES:

Bailey, L.H. 1971. Manual of Cultivated Plants. MacMillan. New York, N.Y.
Hay, R., P.M. Synge. 1991. The Colour Dictionary of Garden Plants with House and Greenhouse Plants. Bloomsbury Books, London.
Munsell Color Chart for Plant Tissues. Macbeth. P.O. Box 230 Newburgh, N.Y. 12551-0230
The Wise Garden Encyclopedia. 1990. HarperCollins Publishers. New York, N.Y.

COMMENTS (Attach photographic prints; Continue in Exhibit D)

INSTRUCTIONS

Please read instructions carefully before completing the attached form. The Objective Description Form is a necessary part of an application for Plant Variety Protection (Breeder's Rights) in the United States of America. It is designed to guide the applicant in describing a plant variety in detail so that comparisons with other varieties may be done in a meaningful way. It is in the applicant's best interest to describe the application variety as completely as possible to establish an adequate variety description.

The applicant's name and complete address should be at the top of the form. The country should be included since it is needed when mailing to some areas. The name of the variety is also entered at the top of the form. The Plant Variety Protection Office will assign a unique PVPO Number to each application and enter it below the variety name.

The "General Form for Any Species" was designed to allow the applicant the most freedom in describing the variety in a way that is most appropriate to the crop and needs of the Plant Variety Protection Office. A good botanical dictionary or key should be used to provide the most specific terms to describe qualitative plant characteristics (SECTION 1) in the classical Linnaean (botanical) way. For example, when describing leaf margins, the applicant should use terms such as entire, crenate, dentate, incised, serrate, sinuate, spinose, or undulate. Similarly, flowers should be described as actinomorphic, zygomorphic, monoecious, dioecious, etc.

Choose one variety to use as a comparison variety throughout the Objective Description Form. Describe the comparison variety in the right-hand column for all traits. The variety that you choose should be the most similar one in terms of background and morphology. It should be the same one used in Exhibit B to describe the novelty of the application variety. The comparison variety should be grown in trials with the application variety for 2 – 3 location/years (environments) in the region of best adaptability. The varietal and environmental data collection should remain available for an additional 3 years to resolve any questions concerning comparisons or descriptions of varieties.

In general, measurements of quantitative traits (SECTION 2) should be taken in 15-25 randomly selected plants or plant parts to obtain averages and statistics that describe a typical planting of the variety. For each of the measurable traits, report the mean, the number of plants measured, and the standard deviation.

$$\text{Standard Deviation} = \sqrt{\frac{\sum (X - \bar{X})^2}{(N - 1)}}$$

The color descriptions (SECTION 3) must include the verbal color name and color codes from the "Munsell Color Chart" or other published color chart. An example of this is given on the top of the section. The color chart code is a more objective method for describing colors, however, verbal descriptions are used in seed catalogs and other literature references from which the databases are created. The verbal color continues to be necessary in distinguishing new varieties from all varieties of prior existence.

Test as many disease and insect reactions (SECTION 4) as possible before applying for protection, especially the most common diseases or insect pests for the crop.